

REMARKS

Reconsideration of the pending claims is respectfully requested in view of the above amendments after final, which are limited to simple deletions discussed in a telephone conference with the Examiner of November 26, 2006, and following remarks made in light of the documents referred to below.

Claim 1 is amended to require that the step of causing the blowing agent to generate gas bubbles within the solution or solutions is carried out *after* the step of coating the support with the solution. This amendment is consistent with the method carried out according to the Examples.

Claims 12 and 13, which relate to the step of causing the blowing agent to generate gas bubbles within the solution *before* the step of coating the support with the solution, have been cancelled.

The amendments to the claims are supported by the specification including the Examples.

Entry of the present amendments is respectfully requested, since they address the issues identified by the Examiner, clearly distinguish from the cited references and are believed to place the application in condition for allowance. The Examiner is encouraged to exercise her discretion to enter the requested amendments in light of the following remarks and the discussion in telephone conference with Applicant's representative of November 26, 2006, and in expediting the grant procedure.

Rejection under 35 USC 112, first paragraph

Claims 1, 4-13 and 16-18 were rejected as failing to comply with the written description requirement. The Office Action alleges that the claim(s) contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the Office Action alleges that the description of the ink receiving layer as "porous, swellable, foamed" (as in line 2 of claim 1) does not appear in the specification as originally filed, and is therefore new

matter. For at least the following reasons, Applicant traverses the rejection.

The term “porous, swellable, foamed polymer ink receiving layer” is supported by the specification as originally filed. At page 3, lines 15 to 16, it is stated that interacting with the solution to cause the blowing agent to generate gas bubbles “causes foaming of said hydrophilic polymer”, which as stated at page 4, lines 13 to 14 results in “forming a polymer foam on the support”. According to page 4, lines 19 to 20, the approach according to the invention relies on “the formation of a *porous hydrophilic polymer*”. At page 5, lines 24 to 30, it is stated that the method of the invention creates a voided layer, which consists of a hydrophilic polymer, which polymer *must be sufficiently swellable and hydrophilic for the formed material to function as an inkjet medium*. The formed material is an ink jet medium having a support and a porous receiving layer formed of a foamed layer of swellable, hydrophilic polymer. The Examples describe the foaming of a layer of swellable hydrophilic polymer to generate a porous layer on the support, consistent with the current claim. It follows from the above discussion that there is a clear and unambiguous teaching, as would be understood by the skilled person in the art, of a method of making an inkjet medium comprising a support and a “porous, swellable, foamed polymer ink receiving layer” on top of the inkjet medium.

For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

Rejection under 35 USC 102(b) over EP 1060901

Claims 1 and 4 were rejected under 35 U.S.C. § 102(b) as being clearly anticipated by EP 1060901. According to the Office Action, ‘901 teaches forming a porous foamed base layer for an inkjet recording element by applying a hydrophilic polymer such as gelatin or PVA plus blowing agent to a support (page 4, lines 4-37). In response to the Applicant’s earlier argument that the base layer disclosed in EP 1060901 is a sponge layer for absorbing ink and not an ink-receiving layer, the Examiner states in the Office Action that the base layer, by absorbing ink, is acting as an ink-receiving layer.

Furthermore, in response to the argument that the ‘901 base layer is not the top

layer, the Office Action alleges that the instant claims do not claim that the ink receiving layer is the topmost layer, but only that the receiving layer is on top of the support layer.

For at least the following reasons and as discussed in the telephone conference with the Examiner on November 27, 2006, Applicant traverses the rejection.

EP 1060901 relates to an image recording element for ink jet ink and comprises a support, an absorbent base layer and a top layer that is ink receptive. It discloses on page 4, lines 22-23 that a porous structure may be introduced into the base layer by the addition of ceramic or hard polymeric particulates, by foaming or blowing during coating or by inducing phase separations in the layer through the introduction of non-solvent. It is also disclosed at page 4, line 12 that the base layer is primarily intended as a sponge layer for the absorption of ink, i.e. not an image-receiving layer, which is the purpose of the top layer.

Amended claim 1 concerns a method of making an inkjet medium comprising a support and a porous, swellable, foamed polymer ink receiving layer *on top of the inkjet medium*, wherein said support is selected from the group consisting of resin coated paper, film base, acetate and polyethylene terephthalate, said method comprising the steps of: coating a support with a solution comprising a swellable hydrophilic polymer and a blowing agent or simultaneously coating a support with a plurality of solutions, each comprising a swellable hydrophilic polymer and a blowing agent; and *after* the step of coating said support, causing said blowing agent to generate gas bubbles within the solution or solutions, causing foaming of said hydrophilic polymer, thereby forming one or a plurality of ink-receiving layers, including at least the porous, swellable, foamed polymer ink receiving layer on top.

Contrary to the Examiner's assertion, currently amended claim 1 does claim that the porous, foamed, swellable polymer ink receiving layer is the topmost layer, since lines 2 to 3 of claim 1 state that that layer is "on top of the inkjet medium." EP '901 only discloses the possible use of a blowing agent and the coating material to generate a porous structure in the base layer, for use as a sponge layer or sump for absorption of ink solvent. Since the identified passage of EP '901 is only concerned with the base layer of the ink jet medium described therein, claim 1 is at least novel over EP '901 for this reason. The purpose, function, and properties of a

sump layer are very significantly different form that of an image-receiving layer. Clearly, the properties of a sump layer, which is not visible, are generally much less demanding than the layer in which the image is created for viewing. The uniformity and quality of the foaming would clearly be important to the quality of the image. At the same time the a foamed hydrophilic polymer in the base layer, as compared to an image-receiving layer would not have any advantage for ozone fade. The skilled artisan would be unlikely to consider foaming of the image-receiving layer, as compared to the base layer, worthwhile to even try or enable or merely to obtain porosity, which is probably why the prior art specifically limited mention of foaming to a base layer and never referred to its use in an image-receiving layer.

Furthermore, amended claim 1 further currently distinguishes over EP '901 by requiring that the solution coated onto the support is caused to foam *after the step of coating said support*. EP '901 on the other hand only mentions foaming in respect of *foaming or blowing during coating* to introduce a porous structure into the base layer. The foaming after coating has been found to provide the controlled high quality foaming resulting in a high quality image.

Accordingly, it is submitted that EP '901 does not disclose the subject matter of claim1 or claim 4. For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

Rejection under 35 USC §102(b) over US 6,291,127 (Dagan et al)

Claims 1, 4 and 6 were rejected under 35 U.S.C. §102(b) as being clearly anticipated by Dagan et al (US 6,291,127). According to the Office Action, US '127 teaches applying a hydrophilic ink receiving layer comprised of polymers foamed by blowing agents. The polymers include gelatin and PVA. According to the Office Action, the layer is applied to a cellulose paper base that has been impregnated with a condensation polymer (i.e. resin-coated paper). The layer may also contain surfactants (column 3, lines 5 to 11; and column 12, line 42 to column 13, line 57). In response to Applicant's earlier argument that US '127 has a particular support, the Office Action states that the base is a resin-coated paper, thus meeting the limitations of claim 1 regarding the support. For at least the following reasons, Applicant traverses this rejection.

US 6,291,127 (the '127 patent) is primarily concerned with providing a support substrate for an imaging medium, such as thermal dye transfer media, electrophotographic media, photographic media or ink jet media among others, which support substrate is resistant to liquid penetration whilst maintaining a favored fibrous feel, thereby not causing cockling. In particular, *the support substrate according to US '127 comprises a highly refined, internally sized cellulose paper base that has its surfaces impregnated with a water dispersible ester based condensation polymer* such that the impregnated paper exhibits a hydrophobicity as measured by 40/20 Acid Valley in excess of 500 seconds. At column 13, lines 14-17 thereof, it is mentioned that a porous structure may be introduced into ink receiving layers comprised of hydrophilic polymers by foaming or blowing during coating (among other methods), among a large number of other ink receiving layer composition alternatives.

Amended claim 1 concerns a method of making an inkjet medium-comprising a support and a porous, swellable, foamed polymer ink receiving layer on top of the inkjet medium, *wherein said support is selected from the group consisting of resin coated paper, film base, acetate and polyethylene terephthalate*, said method comprising the steps of: coating a support with a solution comprising a swellable hydrophilic polymer and a blowing agent or simultaneously coating a support with a plurality of solutions, each comprising a swellable hydrophilic polymer and a blowing agent; and after the step of coating said support, causing said blowing agent to generate gas bubbles within the solution or solutions, causing foaming of said hydrophilic polymer, thereby forming one or a plurality of ink-receiving layers, including at least the porous, swellable, foamed polymer ink receiving layer on top.

The disclosure in US '127 relates to a new substrate, which is the topic of the invention described therein. All disclosure of other materials therein relate to the potential uses of that substrate. Contrary to the Examiner's assertion, there is no disclosure in US '127 of using a porous hydrophilic ink receiving layer with any other support substrate and accordingly the currently amended claims are novel over '127. In particular,

contrary to the Examiner's assertion, the substrate in US '127 is not a resin-coated paper. At column 3, lines 26 to 32, the disadvantages of resin-coated structures relative to the substrate of EP '901 are presented. The benefits of the substrate of the impregnated cellulose paper of US '127 over resin-coated paper are then described. Accordingly, it is submitted that the substrate of US '127, by definition, which is consistent with the common understanding of the skilled artisan, is not a resin-coated paper and currently amended claim 1 is novel over US '127 for at least that reason. Claim 1 is further distinguished over US '127 by requiring that the solution coated onto the support is caused to foam *after the step of coating said support*. The identified passage of US '127 at column 13, lines 14 to 18, however, mentions the possibility of introducing a porous structure only by "foaming or coating during coating".

Accordingly, it is submitted that US '127 does not disclose the subject matter of claims 1, 4 or 6. For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

Rejection under 35 USC §103(a) over EP 1060901

Claims 5-12 and 16-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over EP 1060901. For at least the following reasons, Applicant traverses the rejection.

In view of the submissions made above in respect of the novelty of currently amended claim 1 over EP '901, it is submitted that claims 5-11 and 16-18 are patentable over EP '901 by virtue of their dependence on claim 1, which is novel and inventive over the cited reference.

EP 1060901, the subject matter of which is discussed above, is concerned with an image recording element for inkjet ink images having a support, an absorbent base layer and an ink receptive top layer which comprises a hydrophilic polymer, gelatin, a gelatin crosslinker and a humectant. According to page 4, lines 12 to 13, the base layer of '901 is primarily intended as a sponge layer *for absorption of ink solvent*. At paragraph 22 (page 4, lines 22 to 24) of EP '901, it is stated that "A porous structure may be introduced into the base layer by the addition of ceramic or hard polymeric particulates, by foaming or blowing during coating, or by

inducing phase separation in the layer through introduction of non-solvent.” However, there is no expansion upon how introducing this porosity might be achieved by the foaming or blowing method and none of the Examples of EP ‘901 describe a porous base layer. The skilled person in the art is not taught how to put what is a speculative and incomplete mention of some type of foaming or blowing *during* coating into effect in the context of the invention described in EP ‘901. There is no mention of how it would be done, what it would form, nor how much foaming agent should be added. In the context of the disclosure in EP ‘901, the skilled person would cautioned against foaming the base layer, due to the disclosure at paragraph 24 (page 4, lines 27 and 28) that “In general, it is sufficient for the base layer to be hydrophilic, but not porous” and that “porosity may cause a loss in gloss.” This would discourage the skilled artisan from introducing foaming into the image-receiving layer, which is neither taught nor enabled. Even if the skilled person were to attempt to introduce a porous structure into an image-receiving layer of the element described in EP ‘901, it is submitted that, because of the mention at page 4, lines 22-24, the outcome of causing foaming or blowing *during* coating of the layer would not be foreseeable but that it is likely to result in an inadequate image recording element due to undulations and inconsistencies in the surface as a result of having a blowing gas formed during the coating process, not to mention such potential issues as coalescence, bleeding, and density with respect to image formation in the presence of foamed material.

In summary, it is submitted that the skilled person in the art in possession of EP ‘901 would not be led by the disclosure therein to the method of currently amended claim 1, which requires that a “porous, swellable, foamed polymer ink receiving layer” is formed “on top of the inkjet medium”, and which requires that the layer is formed by causing the blowing gas to generate bubbles in a solution of a swellable hydrophilic polymer *after* the coating of that solution onto the support, because the only reference to foaming or blowing in EP ‘901 is to the base layer (and not to the ink receiving layer of EP ‘901), there is no exemplification of foaming the base layer, foaming the base layer in ‘901 is not encouraged and the foaming process mentioned in ‘901 is “foaming or blowing during coating” which, with

respect to an imaging layer, is neither enabled nor indicative of a predictably successful outcome. Accordingly, it is submitted that claim 1 is not obvious over EP '901.

For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

Rejection under 35 USC §103(a) over Dagan et al (US 6,291,127)

Claims 5, 7-12 and 16-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Dagan et al (US 6,291,127). For at least the following reasons, Applicant traverses the rejection.

In view of the submissions made above in respect of the novelty of currently amended claim 1 over EP '127, it is submitted that claims 5, 7-11 and 16-18 are patentable over EP '127 by virtue of their dependence on claim 1, which is novel and inventive over the cited reference.

US 6,291,127 is primarily concerned with the impregnation of a cellulose paper with a hydrophilic polymer to form an imaging substrate with improved properties, which may find utility in a range of imaging applications. One such application is as an inkjet recording medium as discussed generally from column 12, line 42 to column 13, line 67 of '127. The composition of the layers may be from any of a large range of components described from column 12, line 58 to column 13, line 10 and at column 13, line 11, it states "Hydrophilic polymers, inorganic oxide particles, and organic beads may be present in one or more layers on the substrate and in various combinations within a layer". The document then mentions the possibility of introducing porosity "by the addition of ceramic or hard polymer particles", by "foaming or blowing *during* coating", or "by inducing phase separation in the layer through introduction of nonsolvent," whilst again adding that porosity in the base layer is not necessary and may cause a loss in gloss. There is no indication or suggestion as to the expected outcome of using the foaming technique, nor any indication of what the composition of a layer to be made porous might be, given the breadth of possibilities and the open language of the preceding passage. There is not identified in US '127 any particular advantage of utilizing a porous ink receiving layer with the support substrate

as opposed to any of the many other described ink receiving layers for use in ink jet printing or other imaging methods. There is no exemplification of the use of foaming to generate a porous layer on the substrate of US '127 nor of the coating any layer being coated on the substrates which are the primary focus of US '127. And there is no teaching as to how the foaming process should be conducted. It is submitted that the skilled person in the art would not be led by the disclosure of US '127 to attempt to prepare an ink jet medium having a porous, foamed, swellable polymer layer on top of the ink jet medium and even if he did attempt to generate a foamed layer, would not do so with an expectation of success and would not do so by causing the swellable polymer solution to foam *after coating onto the support*.

The preparation of an ink jet medium having a porous, foamed, swellable polymer ink receiving layer on top of the ink jet medium made by the method of currently amended claim 1 requires the intention to generate a porous, swellable layer on the support to generate a hybrid category of ink jet receiver having the rapid uptake of ink and protection of a dye image formed from environmental effects, which intention was not evident in the disclosure of US '127, and given that intention, careful attention to the relative proportions of blowing agent, hydrophilic polymer and solvent and timing of foaming to ensure a useful foamed receiver is required. The disclosure of US '127 does not support this.

Accordingly, it is submitted that claim 1 is not obvious over the disclosure of US '127.

For at least the above reasons, reconsideration and withdrawal of the rejection are in order.

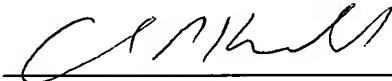
Rejection under 35 USC §103(a) over EP 1060901 or Dagan et al (US 6,291,127), either taken in view of KR 2000-0063640

Claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over EP 1060901 or Dagan et al (US 6,291,127), either taken in view of KR 2000-0063640. In view of the cancellation of claim 13 requested above, the Examiner's rejection of this claim is moot.

The Examiner's time and receptive attitude in participating in a telephone conference with Applicant's representative is appreciated and the Examiner's discretion in allowing these simple amendments after final rejection is encouraged in order to ensure an expedited procedure.

In view of the foregoing remarks, reconsideration of the above identified patent application is respectfully requested. Prompt and favorable action by the Examiner is earnestly solicited. Should the Examiner require anything further, the Examiner is invited to contact Applicant's representative.

Respectfully submitted,



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